UNIVERSITY OF TARTU
DEPARTMENT OF ENGLISH STUDIES

DESIGNING AN ENGLISH FOR SPECIFIC PURPOSES E-COURSE FOR CYBER DEFENCE STUDENTS AT PÕLTSAMAA CO-EDUCATIONAL GYMNASIUM

MA Thesis

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TARTU

2018

ABSTRACT

The main aim of this MA thesis is to provide the theoretical principles for e-course design and to design and conduct an English for Specific Purposes (ESP) e-course for students in the field of cyber defence in Põltsamaa Co-Educational Gymnasium. The paper examines various types of syllabi, the importance of technology in an ESP course and models for creating an e-course.

The thesis is comprised of introduction, two chapters, conclusion, references and five appendices. The introduction explains the reasons for the study and lists the purposes. The relevance of the ESP course in school curriculum is explained. The meaning of ESP as a subject to be taught was discussed along with e-learning advantages.

Chapter 1 reviews the literature related to syllabi and syllabus design. The importance of e-learning and technology in an ESP course is described and the models for creating an e-course are explored. The ADDIE model as one of the most used is presented.

Chapter 2 focuses on designing the ESP e-course for students in the field of cyber defence. The course is comprised using the ADDIE model which consists of five phases. The analysis phase includes students' questionnaire for needs analysis for the course, design phase describes the learning objectives. The development phase outlines the topics and provides the examples of the tasks of the e-course, followed by the implementation phase, which describes the comprising of the course. The final phase, the evaluation, presents the results of the students' feedback questionnaires.

The needs analysis framework, students' needs analysis questionnaire and students' feedback questionnaire among with the developed ESP course syllabus are presented in Appendices.

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INTRODUCTION

Põltsamaa Co-Educational Gymnasium started to offer cyber defence as a field of study in 2015 in cooperation with the Estonian Defence League, the Estonian Atlantic Treaty Association and the Estonian Defence League's Cyber Unit. Technology and cyber defence topics are important worldwide and English is the most used language in technology; hence, it is only relevant to offer students in the cyber defence field of study in Põltsamaa Co-Educational an English for specific purposes (henceforth ESP) course.

There are no ready-made materials (including a syllabus) available for such a course, nor has a cyber defence field of study been taught anywhere in Estonia before; therefore, it is necessary to create a syllabus and course materials for the ESP course.

The main purpose of this MA thesis is to provide the theoretical principles for e-course design and to design, conduct and assess the feedback of students an English for Specific Purposes e-course for cyber defence students at Põltsamaa Co-Educational Gymnasium. The course is comprised of 35 academic hours of independent work and focuses on terminology. The research questions that arise when compiling such a course are how to teach cyber defence English to students and what the content should be.

Põltsamaa Co-Educational Gymnasium opened a cyber defence field of study (a 3-year upper secondary school programme) in 2015. Thus, the school became probably the first secondary school in the world to open this specific field of study at the upper secondary school level. It combines academic learning with students' technological interests, creating prerequisites for the implementation of cyber security and for preparing competent professionals and responsible citizens. The programme consists of four core cyber defence

courses: information society; the basics of information technology and secure networking; digital security and cryptography; and an introduction to mechatronics. In addition to that, in total, students must pass 10 courses in the cyber defence field of study. In addition to the seminars and programmes students have in Põltsamaa, they also participate in various training visits and a practical programming work shop at the Institute of Computer Science of the University of Tartu, the NATO Cooperative Cyber Defence Centre of Excellence, the e-Estonia Showroom, the Republic of Estonia Information System Authority, Santa Monica Networks, and the Ministry of Foreign Affairs of Estonia. In Form 12 students take an exam to obtain MTCNA certification. (Curriculum of Põltsamaa Co-Educational Gymnasium)

Põltsamaa Co-Educational Gymnasium's efforts in innovation were recognized by the Estonian Ministry of Education and Research, when the new field of study won the Deed of the Year prize in 2016. On 14 December 2017, the European Crime Prevention Network awarded the main prize of Europe's best crime prevention project to the curriculum of cyber defence in Põltsamaa Co-Educational Gymnasium (Rammus 2017).

Moreover, the Estonian national curriculum states eight general competences, one of which is digital competence. A part of digital competence is to be aware of the dangers of the digital environment and be able to protect privacy, personal data and one's digital identity (Gümnaasiumi riiklik õppekava 2011). Thus, learning English for cyber defence has a relevant place in the curriculum of Põltsamaa Co-Educational Gymnasium and the Estonian national curriculum as a whole. Therefore, the directorate of the school decided to offer an English course specially for the students in the field of cyber defence.

What is ESP?

Cyber defence English focuses on one field of study and meets the needs of the learners, which makes it an ESP course. Hutchinson and Waters (1987) define ESP as an approach rather than a product. They explain that ESP does not involve a particular kind of language, teaching material or methodology. The main purpose is the necessity of learning a certain language.

Robinson (1991: 1) bases his definition on two criteria: ESP being 'goal-directed' and development from a needs analysis which aim to specify the exact things students have to do through the medium of English.

Strevens (1988) was the first to define ESP by identifying the absolute and variable characteristics of ESP. Dudley-Evans and St John (1998) modified the explanation and gave the definition of ESP using descriptions of absolute and variable characteristics. Absolute characteristics are described as being designed to meet special needs of the learner and make use of the underlying methodology and activities; they are centred on the language, skill, discourse and genres appropriate to these activities. Variable characteristics may be related to specific disciplines; these characteristics may use different methodology from that of general English and they are likely to be designed for adult learners or learners at secondary level, as ESP courses are generally designed for the intermediate or advanced level and these courses assume basic knowledge of the language system, although the courses still may be used with beginners. (Dudley Evans, St John 1998)

Considering the definitions and characteristics of ESP, Carver (1983: 131) states three components typical of ESP courses: authentic materials, purpose-related orientation and self-direction, the latter meaning that ESP is concerned with turning learners into language users. Bojovic (2006: 487) agrees with the need of materials being authentic as the main

purpose of an ESP course is to enable students to deal with authentic information. Bojovic adds the importance of the materials being up-to-date and relevant for the learners (2006: 487).

Since ESP courses are of various types, depending on the specific profession or field, teachers need to have different roles while teaching ESP. According to Bojovic (2006: 487-493), "ESP teachers are not specialists in the field, but in teaching English, their subject is English for profession but not the profession in English." As a result, an ESP teacher needs to collaborate with learners and specialist teachers to create an acceptable course.

In conclusion, an ESP course focuses on a profession or a specific field while learning English and it meets the specific needs of the learners.

E-learning

The aim of a course (including e-courses) is to obtain the best results in students' studies; therefore, different types of learning should be considered carefully. Today, online and blended learning are used in addition to traditional classroom courses. Online learning has become popular with the growth of technology and more institutions offer e-courses to enhance learning.

E-learning is defined by Brown and Voltz (2005) as teaching and learning which are delivered, supported and enhanced by using technology and digital media. Khan (2005: 275) states that e-learning is an innovative method for delivering a facilitated learning environment, which is characterised by good design, interactivity and centred on the learner by taking advantage of the functions available in many digital technologies with suitable learning materials for open and flexible learning environments.

Choosing to use an e-course only and compiling materials for that should encourage students to study actively. Making learning flexible for students by allowing them to choose the time, place and pace and by considering their previous knowledge and learning styles also encourages students to participate actively in their studies (Khan 2005: 275 - 283). Students' special needs and cultural diversity can also be taken into consideration when choosing the components for an e-course. (Villems et al. 2013: 5). E-learning makes students responsible for their own studies so the learning process becomes more learner-centred. Another key element in creating the course is the feedback – both for students to reflect on their results and help them to analyse their studies and for the teacher from the students to analyse the content of the course and requirements.

E-learning provides many advantages to the students. Upadhyay (2006) and Yucel (2006: 127 - 129) explain the learning advantages and features offered by an online learning environment. Online learning, according to them, provides individualisation of learning and affords flexibility in scheduling activities, as well as the place and time of the learning by allowing to take part in the learning online. Furthermore, controlled learning, like providing learning materials via the Internet, makes it easy for the learner to navigate and choose the sequence of materials appropriate for them, includes many diverse learning media that enhance learning and provides a social learning environment available through online discussions where interaction with other learners is made possible via electronic discussion lists and professors are free to communicate with students. Another advantage of e-learning is providing opportunities for students for better learning, for instance, providing opportunities for learner-centred learning, which is consistent with the learning philosophies and theories of modern learning, and providing a great variety of sources of information in various formats that helps to dissolve or minimise differences between students. Equally important advantages are leaving a positive impact in various learning situations and

providing diverse opportunities for achieving different goals of teaching and learning. Of course, providing a tool for the development of meta-cognitive aspects of learning and the development of problem-solving skills, and providing a serious constructive learning environment, also has its value.

In conclusion, e-learning has many advantages to be taken into consideration, but it also means that the course has to be planned carefully in order to maximise results.

The current thesis is divided into two chapters. Chapter one deals with the principles relevant to syllabus design as well as the effectiveness of e-learning and creating a quality e-course. Chapter two describes the methodology used for this project and presents the goals, objectives and outline of the e-course. The empirical part focuses on needs analysis conducted in the form of a questionnaire (Appendix 2) among students of cyber defence in Põltsamaa Co-Educational Gymnasium in forms ten to twelve. The course materials are designed according to the ADDIE model, which is much used due to its flexibility. Molenda (2003) describes the ADDIE model to be a systematic approach to instructional advancement in which the model divides creating and managing the process of creating and conducting an e-course into five important stages: analysis, design, development, implementation and evaluation. Chapter two also presents and analyses the responses to the students' questionnaires (Appendix 3). In order to make future improvements, the usefulness of the materials are analysed according to students' feedback

1. DESIGNING AN ESP E-COURSE

The aim of the current thesis is to design an ESP course by writing a syllabus, choosing and compiling materials to create an e-course for the students to learn at their own pace; therefore, it is only relevant to understand the meaning of the syllabus and principles of syllabus writing as well as the concept of creating an effective and quality e-course. Richard (2001: 152) claims that the syllabus describes "the major elements that will be used in planning a language course and provides the basis for its instructional focus and content." In the current chapter different ways of defining the syllabus and choosing the materials as well as creating a quality e-course will be presented and analysed.

1.1. Syllabi and syllabus design

A syllabus can be defined as a list of the topics, books, etc. that students should study in a particular subject at school or college. A syllabus is basically a guide of the course giving its goals, expectations and responsibilities for learners and teachers. It should be clear there would not be any misunderstandings and confusion on anything relating to the course. A syllabus is defined by Hutchinson and Waters (1987) as a working document; to attain the goals and objectives and maximise the process of learning, it should be used flexibly and appropriately. Breen (1984: 47) sees a syllabus "as a plan of what is to be achieved through our teaching and our students' learning. It performs as a guide for both teacher and learner by providing some goals to be accomplished". Hutchinson and Waters (1987: 80-87) explain that the different kinds of syllabi have different purposes and functions and they could be described as follows:

1. *The evaluation syllabus* states the learners' knowledge by the end of the course and assessment basis by the Ministry of Education. The evaluation syllabus reflects an official expectation and it gives the basis on which success or failure is evaluated.

2. *The organisational syllabus* states the content and the order of learning the items and topics from the easiest to the more complicated. The organisational syllabus gives guidelines to the learning and teaching process, the information and knowledge students start with should motivate them to continue learning. New information gained in the lesson needs to be associated to the previous knowledge, so the items need to move from basic to more complex.

3. *The material syllabus* is interpreted by its writer who decides the context, the relative weightings and integration of skills and the exercises to be used in learning.

4. *The teacher syllabus* is the teacher's interpretation of the syllabus. The teacher syllabus takes the real situation into consideration as the teacher can adjust the topics and methods according to the learners needs.

5. *The classroom syllabus* is generated by the classroom it is used in by affecting what is taught and learnt by its dynamic and interactive environment. The classroom creates conditions which might affect a planned lesson and influence both what is taught and what is learnt.

6. *The learner syllabus* is an internal syllabus which is the network of knowledge the learner has. It includes the student's previous knowledge and experience of learning as well as personal preferences and motivation.

Syllabi can also be a mixture of different types of them. The syllabus for the ESP course going to be developed in the current thesis can be defined as combination of teacher syllabus and organisational syllabus. The organisational syllabus determines the content and the items for the cyber defence students; therefore, it gives general guidelines for language learning.

The teacher syllabus interprets the topics and takes the real learning situation into consideration while choosing the items and language to be taught. The topics should be chosen bearing in mind the principle of presenting the material from the easiest to more difficult.

The syllabus is an essential document in learning and teaching as it provides the essential information about teaching the course; therefore, it should be flexible yet remain the same for years at the same time. Harmer (2001: 295) explains that "every syllabus needs to be developed on the basis of certain criteria" and establishes some rules that should be taken into consideration when designing a syllabus. They consist of learnability, frequency, coverage, and usefulness. Learnability is explained as ordering the learning material from the easiest to more complex. In other words, more familiar topics and subjects must come first to associate more complicated information to material that is already known. Frequency is defined as integration of the most frequent items used in target language while coverage means terminology and structures which are widely used to be incorporated in the use of language. The final term, usefulness, describes language forms and skills that are useful for learners. (Harmer 2001: 295)

The course content is one the most relevant issue in course design as it determines the language use, the nature of the language and the learning of the language during the course. The needs analysis gives the guidelines to start planning the materials. Richards (2001: 145) also suggests some ideas for compiling the materials: available and published literature and materials on the topic; a review of similar courses and tests in the field of study; a consultation with specialists and teachers in the field of study. After having a list of goals, objectives, topics, skills, and ideas, all the materials have to be organised and carefully selected to create a course where the most effective learning takes place.

In an ESP course the teacher has an important role in designing a course where the most relevant materials, methods and assessment provide a coherent learning process. Choosing and creating materials for an ESP course is a challenge for teachers. Hutchinson and Waters (1987: 106-108) identify some principles which should be used as objectives in designing materials. Those principles describe good and adequate material as material that gives stimulus to learning in the way that interesting texts and enjoyable activities motivate students to learn more actively. Systematic course material should be flexible enough to provide a comprehensible and rational unit structure for students to feel safe in a familiar learning situation. Furthermore, material should represent a vision of the nature of language and should definitely have correct appropriate language in order to provide students the best options for learning. Besides that, compiled materials should be complex enough but still manageable for students to motivate them to learn without worrying about materials that they cannot control. Finally, the materials should use updated teaching techniques to keep up with possible improvements in teaching.

Planning the syllabus and choosing the materials for the course are essential and a lot of attention has to be paid to designing the course. Based on the above, designing the syllabus carefully is important to students' motivation, learning outcomes and teaching the course.

1.2. ESP and technology

Technology in its various forms has always been part of language learning and teaching and the use of e-learning is the most common in language learning (compared to other subjects) (Gaebel 2013: 9). ESP teachers have always used different tools to create materials and design situations according to students' needs (Arno-Marcia 2012), and the Internet has had a notably strong impact on using technology (Kern 2013: 92). The Internet allows fast and efficient communication, exchange, and management of information. As learners' needs

and authentic tasks are vital in an ESP course, many language teachers have combined the learning with some kind of technology which their learners use in their profession (Kern 2013: 92).

Butler-Pascoe (2009: 2-3) specifies the advantages of technology for ESP, which include providing interaction and communicative activities representative of specific environments, using authentic materials, and supporting cognitive abilities and critical thinking skills required in all disciplines. Being student-centred and addressing the special needs of the students and providing appropriate feedback are also among the advantages. Technology allows different tools and environments to enhance the collaboration between students while learning a subject, for example via different forums and groupwork tools. Using the Internet, various environments, and online exercises support an individual approach to students' needs and let the learners get instant feedback on some tasks.

The Internet provides an abundance of authentic materials and information on many topics. In addition to materials, it can also provide different tools and platforms that allow learning online. Most ESP students can find materials they need, and interact in professional communities and with other learners of their field online (Macia et al. 2006). The various tools allow learners to become more autonomous and monitor their learning (Zhong 2008: 147-148). Technology itself does not make learners autonomous, but with the help of appropriate support and guidance it might bring about autonomy (Arno-Marcia 2012). Online tools and learning management systems offer the opportunity to teach and learn in different ways and enhance traditional lessons. In addition, these online tasks and environments allow students to learn independently and take responsibility of their own learning as most of the online activities offer instant feedback of the exercises and are accessible all the time. However, without the guidance of a teacher, only the most motivated students continue learning while the amount of materials might be overwhelming and

discouraging for others; thus, the role of the teacher is relevant even with online learning. Motivation, attention, and focus challenges are also the main concerns by students according to the study by Clinefelter (2015). The same amount of students (27%) in the study are worried about the perceptions of quality of online learning. So as previously described, thorough planning of syllabus, material, and tools is definitely necessary.

Learning management tools offer different dynamic and flexible platforms that can be used to improve learning and teaching process. One of the most popular open source learning management tools according to Pappas (2015) is Moodle, as it gives the possibility to use dashboards, learner tracking, and multimedia support. Crosslin (2009: 505-508) agrees and states that Moodle allows social connection between students which can be used to support learning. Moodle stands for modular object-oriented dynamic learning environment. The author of Moodle, Martin Dougiamas, describes the tool as a course management system that is built on social constructivist pedagogy, where the students can contribute to their learning and educational experience. Moodle is used to create online courses to achieve students' goals. The first version of it was introduced in 2002 and it has been improved and developed since. Although Pappas (2015) notes that Moodle may be more complicated for new users, its features are easy to learn and use. Several universities, vocational schools and secondary schools in Estonia, Põltsamaa Co-Educational Gymnasium among them, have started to use Moodle as a platform for various online courses in different subjects.

The advancement of technology and the use of the Internet are equally important for ESP teachers, especially when there is a need to teach specific ESP courses in which cases there are no ready-made materials and course books to use in teaching. As a result, the materials have to be compiled by teachers, so the availability of online materials are invaluable and the abundance of materials on the Internet makes finding relevant and up-to-date materials easier (Kern 2013: 98-100). Using up-to date and authentic materials is

relevant in language learning, as it puts the students in real life situations and makes them more motivated to continue their studies.

Modern technology affects education and as for studies about e-learning, more attention has been paid in higher education than secondary education as most of the universities already offer different e-courses. A broad study of 249 institutions from 38 countries in Europe conducted in 2013 showed that e-learning is implemented in 96% of institutions across Europe; however, the use of it varies as well as the types of e-learning offered (Gaebel 2013: 24-25). Using technological achievements in learning and teaching continues to be significant in higher education. Nearly two thirds (67%) of survey respondents from private and public sectors in a study by Glenn (2008: 4-16) agree that technological innovation will have a great influence on teaching methods.

Effectiveness in e-learning is mostly stated as learning outcomes (Schack Noesgaard, Ørngreen 2015: 283). According to different studies, e-learning is as effective as other delivery methods when used in similar instruction conditions (Bell, Federman 2013: 165). Sitzmann et al. (2006) agreed that e-learning is at least as effective as classroom learning and online components in learning may have additional advantages. E-learning is said to have better results for declarative knowledge (facts and principles) and equal results for procedural knowledge (how to perform a task, skill or action) compared to classroom instructions (Sitzmann et al. 2006). Thalheimer (2017: 10) claims that e-learning in the real world exceeds classroom instruction because they tend to use more effective learning methods while classroom instruction still mostly tends to rely on relatively ineffective lectures. Online learning on average produces stronger learning outcomes than learning only in a classroom situation (Means et al. 2013: 35-29). Learners themselves were equally satisfied with both e-learning and classroom instructions according to Sitzmann et al. (2006). However, the institutional experience in the study among higher education institutions in

Europe listed the improvement of the quality of learning and teaching (57%) as one of the benefits of e-learning (Gaebel, 2013: 44). Several responses also stated that it can improve students' learning.

Studies (El-Seod et al. 2014: 20-25; Osika and Camin 2005: 283) have shown that using e-learning effectively can increase student motivation. The study (El-Seod et al. 2014: 20-25) conducted in British University and Helwan University in Egypt accepted the hypothesis that students prefer online activities to traditional methods. The study also confirmed that one of the crucial factors for students' success in e-learning is self-motivation. Osika and Camin (2005:283) agree and add other factors concerning e-learning effectiveness such as instructors' objectives and learner-centred education, where learners take the responsibility for constructing knowledge and being actively engaged in the learning process.

Incorporating technology does not guarantee motivated students (El-Seod et al., 2014: 25) and while the success of online instruction is related to motivated students, teachers need to explain the environment, encourage students and give feedback, construct the materials and environment to target the learners. Above all, teachers are required to keep in mind that motivation must be nurtured in students (El-Seod et al. 2014: 25).

Technology is an essential part of teaching ESP as it plays an essential role in learners' everyday (future) professional lives (Kern 2013: 92), thus it is only relevant to use technology to create an ESP course for cyber defence students. As English is an international language and a common language in technology, learning terminology and the vocabulary related to the topic and being able to read and write technological texts, is necessary for the students in the field of cyber defence.

In today's context, e-learning enables learners to use various modalities – smartphones, computers, and tablets – to be engaged in learning activities. As technology advances fast

and is more available to everyone, it is only reasonable to connect technology to learning. Students use various devices in their everyday lives, so learning to use these modalities in a beneficial way can only complement the use of diverse devices.

Learners' needs and interests are the key components in e-learning, which have to be taken into consideration when designing an e-course. Although technology does not guarantee motivation and better learning outcomes, studies have shown that it might improve them.

1.3. Models for creating an e-course

Designing a quality e-course is a key issue in e-learning. Afifi (2014: 139) states that quality is a prerequisite for the success of the learning process in general; however, it becomes a necessary issue for e-learning.

E-learning is not just having online materials, but it should also use various interactive possibilities to support learning. Effectively designed e-learning materials should reduce the lack of face-to-face learning. What distinguishes e-learning from traditional education is that the principles of instructional design have to be taken into consideration (Brown and Voltz 2005). Instructional design, the process by which materials are designed, developed, and delivered, should fulfil the objectives of the learning in the best possible manner using a mixture of materials for students with different learning styles.

One method to create instructional course materials is the ADDIE model, which is widespread due to its flexibility. The ADDIE model is a learner-centred approach for e-learning, which has its origin in the 1950s (Kurt 2018). Originally, the model was developed for the US Army by the Florida State University and later it was applied to learning in general. ADDIE stands for analyse, design, develop, implement, and evaluate, and at first

the idea was to complete each stage before moving to the next. However, the model has been developed and by the mid-1980s today's version had emerged (Chart 1) (Kurt 2018).

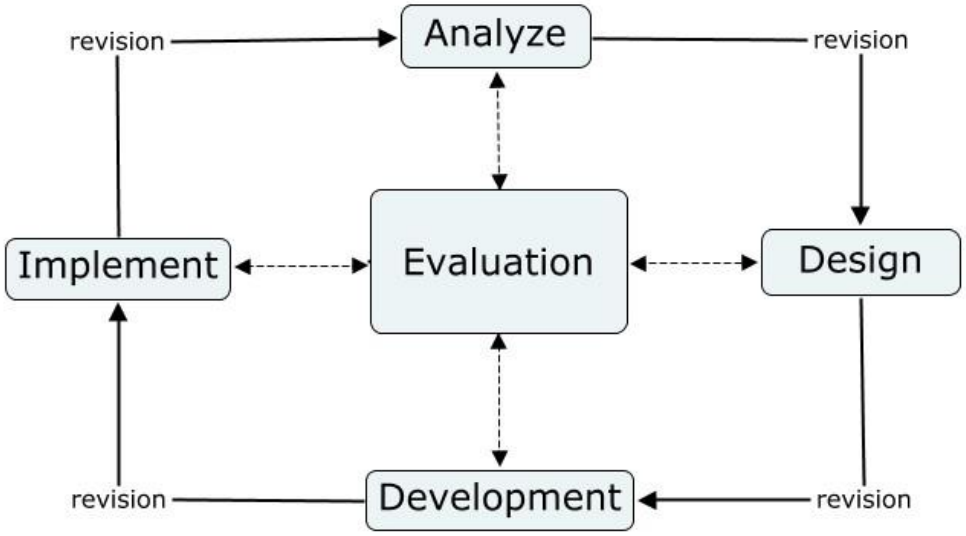

Chart 1. The ADDIE model (Kurt 2018)

Information Technology Foundation for Education (the corresponding acronym in Estonian is HITSA) in Estonia compiled instructions to create an e-course which is based on the ADDIE model (Villems et al. 2013: 5). Peterson (2003: 227) explains that employing the ADDIE model in the development of a program or course can assist developers in instituting a learner-centred approach rather than a teacher-centred approach, making the program more applicable and meaningful for learners.

This model divides creating and conducting of an e-course to five useful clearly defined stages: analysis, design, development, implementation, and evaluation ADDIE model (Chart 1).

The analysis phase clarifies the needs, learners, and context analysis; it should resolve all the instructional problems and objectives. Instructional problems and objectives, learners' needs, and other necessary contextual questions are often asked and determined as a part of a needs analysis. Villems et al. (2013: 7-10) divide the analysis phase into four steps: needs

analysis and objectives, the analysis of conditions, the analysis of the target group, and the analysis of the content. The first step includes needs analysis and formulation of general objectives. Johns (1991: 67) affirms that needs analysis is the first step and explains that it provides validity and relevance for the course. The second step in accordance with Villems et al. (2013: 5) involves resources – time, money, materials, teachers, etc. This is the step, where the course form should be determined e.g. whether the course is an e-course or classroom only; independent study or teacher-led etc. Learners' background, motivation, goals, learning ability, previous knowledge, and learning styles should be considered in the next step to take learners' needs into account. The final step is to formulate the learning outcomes for the course.

Hutchinson and Waters (1987) recommend a similar framework for analysis of learning needs. According to them, the needs analysis should include questions about necessity of the course (Why are the learners taking the course?), learning methods (How do the learners learn?), available sources (What sources are available?), and the learners (Who are the learners?). The needs analysis should clarify the necessity of the course and help to gain a clear understanding of the course.

After learning about the target audience, setting the goals, and determining the ways to deliver the course, the second phase of the ADDIE model gives the structure of the course. The second phase of creating the course, *the design phase*, is where learning objectives, assessment, exercises, content, subject matter analysis, lesson planning and media selection are designed. The design phase should be systematic, logical, and pay attention to details; it should result in the description of the main topics and the goals of the course. Treser (2015) describes three main goals the design phase aims, which involve deciding the format, developing the education strategy, and evaluating the results. Finally, a carefully designed plan for the course makes the next step - the development of the course easier.

Wardt (2014: 33-36) points out the most important system design elements of an e-course. These are high content quality, interface design, and feedback possibilities. High content quality means presenting rich content, which is updated. Links for non-sequential presentation of information are used to make the content clear and easy to follow. Quality content results in higher engagement and more effective learning. Interface design focuses on efficiency of use and gives the possibility to engage by concentrating on the learning process related to the content, instead of learning an interface itself. The purpose of an e-course is to learn the content of the course and not to spend too much time to familiarise oneself with the environment and its use. Elaborated and personalised feedback leads to perceived playfulness and it enhances usefulness. Automatic feedback allows the teacher to be available for specific questions. Feedback should be given in a positive manner in order to lead to continued engagement with the topic.

In addition to these three major points, Ward (2014:36) also includes video-based lectures and real-world case studies as important design elements as they result in higher engagement, more effective learning and better understanding of concepts.

The design phase (Villems et al 2013: 27-37) is followed by *the development phase* where the result should be a completed (e-) course, the full set of materials with instructions. If necessary, technology should be tested and revised to make the course complete. It is recommended to include specialists from different fields to design the courses. For an ESP e-course, specialist teachers help to create the course content and education technicians give technical support. An education technician gives suggestions on designing the material and the course, proposes suitable technologies and methods for the course and helps to design the support for the students while conducting the course (Villems et al. 2013: 27). The design phase finishes with reviewing the course with other specialists or using test groups to get adequate feedback of the course.

Next comes *the implementation phase* (Villems et al 2013: 41-44), which is considered as the most decisive and probably the most difficult part. This is the phase where the course is conducted and everything is applied in practice with real students in real life. When managing an e-course, Salmon (2000) provides a five-stage model for a structured and paced programme, which gives essential support and development to learners at each stage. Stage one is setting up the system and accessing it. In this stage, students might need technical support. Welcoming and encouraging the students is important; the guidance on where to find technical support should also be discussed. The second stage of the online learning model is online socialisation, where sending and receiving messages should familiarise and provide connections between cultural, social, and learning environments. The information exchange in the next step is carrying out the activities of the course and the task of the tutor is to encourage participation and support use of learning materials. Step three is followed by knowledge construction where open activities are facilitated and reflection is encouraged, and the students take more control of their own learning. The final stage is the development stage, where learners are already confident in online learning. The learners are ready to give feedback and set new goals. Villems et al. (2013: 44) also describe four roles for teachers and tutors in online learning during the implementation phase of the e-course. Teachers and tutors have to give technical (computers, online environments), managerial (learning process), social (relationships among course participants), and pedagogical (feedback, help in learning) support.

The final phase of the ADDIE model according to Villems et al. (2013: 47-48) is *the evaluation phase.* Evaluation is the crucial phase in ensuring a quality e-course. Evaluation does not take place only at the end of the course, but it is a process throughout the entire ADDIE model. It gives an evaluation to the complete course. Evaluation can be either external or internal. External evaluation provides an opportunity to get feedback from

experts on the field. An example of receiving external feedback in Estonia is a quality label for e-courses from Information Technology Foundation for Education (HITSA), which indicates that the e-course meets the requirements associated with the label. Internal evaluation includes gathering information during the course and getting feedback to improve and change the course when necessary. Different means of internal feedback include testing the course, students' feedback questionnaires, discussions with colleagues, a feedback forum during the course, monitoring the learning process, and self-analysis (Villems et al. 2013: 48).

Treser (2015) believes that the evaluation phase should not be conclusion but it should enable to review and improve the course. Villems et al. (2013: 48) agree and advise to update the course at least after every three years and take notes for improving the course throughout the implementation phase.

Not only the ADDIE model, but also other authors have verified similar stages when creating an e-course. The most effective principles when designing e-courses are similar in Afifi's work (2014: 139). Based on the results of his analysis, he formulates principles, which start with identifying learning outcomes and learning methods and strategies. Designing learning activities is after the identification stages and the designing phase is followed by feedback. Another principle presented by Afifi is stimulating the learner, and the last formulation is determining the context of learning. Afifi (2014: 139) also states that academic institutions that offer e-learning and distance learning as a part of their program should pay adequate attention to developing quality standards for distance learning, especially in the light of growing competition among universities providing this kind of learning

Designing an effective and motivational e-course for students has to be carefully analysed and planned. Besides stating the goals and objectives and choosing the materials,

tasks and exercises have to be presented in order to enhance the learning and support the students.

In conclusion, several authors have determined important stages when creating an e-course. They focus on planning, designing and feedback and as the ADDIE model was employed by the Information Technology Foundation for Education, the latter one was also chosen when creating the e-course in the framework in this thesis.

2. DESIGNING AN ESP E-COURSE FOR CYBER DEFENCE STUDENTS

In Chapter 1, the ADDIE model was discussed as the models to use when creating a course. The first phase of the models is the analysis phase, where the needs and context analysis can be conducted. Therefore, a needs analysis was considered as a vital part of creating the course. Several authors acknowledge its importance in designing and conducting any language course (Hutchinson and Waters 1987; Robinson 1991; Dudley-Evans and St John 1998; Songhori 2008). According to Robinson (1991: 1), the needs analysis is considered as a basic principle of ESP. Songhori (2008: 2-3) explains that needs analysis refers to activities that are involved in collecting the information which will provide the basis of the course being designed.

2.1. The analysis phase

In the case of the present study, questionnaire for students was chosen as the means of conducting a needs analysis, because it is not time-consuming for both students and teachers. As there are three classes of students in the field of cyber defence in Põltsamaa Co-Educational Gymnasium, it was the most practical way to gather information from students. The questionnaire (Appendix 2) was based on the framework by Hutchinson and Waters (1987) (Appendix 1) where the learning needs were determined.

The questionnaire consisted of two parts and was anonymous, although some more personal information such as students' age, sex, and form, was asked in the first part. The second part of the questionnaire focused on the issues of teaching and learning ESP. The questionnaire consisted of closed and open-ended questions. The closed questions were

about learning activities and rating the importance of ESP, while the open-ended questions gave students the opportunity to explain and expand their answers. The questionnaire was in English and Google Forms was used to carry it out.

In the first part of the questionnaire, the students' age, sex and form were asked. The second part of the questionnaire (questions four to nine) aimed to find out the subjective needs and opinions of the students.

All the students in the field of cyber defence study in Põltsamaa Co-Educational Gymnasium (Forms 10, 11 and 12) were asked to complete the questionnaire. The survey was carried out in October 2017. Respondents included 54 students altogether in forms 10, 11 and 12 in the field of cyber defence, 48 of them completed the questionnaire. 42 male and 6 female students were among the respondents. There were 19 students from form 10 (86% of students in that class), 14 students from form 11 (93%) and 15 students from form 12 (88%).

The questions, based on the framework mentioned before, had several purposes. Learners' subjective opinion about the necessity of an ESP course in secondary school (Q4), the best time (Q5) and the length (Q6) of it were determined by the questions four, five and six. Question seven aimed to glean the students' subjective needs and expectations. Students' suggestions were also gathered in questions seven and eight. To learn about the students' subjective needs of ESP in their future lives, question nine was asked (Appendix 2).

Question four in the questionnaire asked about the students' opinion about the importance of the course. 52% of the respondents (25 respondents) found the relevance to be as important as other subjects, while 29% thought of it as more important. The students had the possibility to explain their answers in English and a summary of the comments were as follows:

- the general importance of English: *English is like a multitool nowadays, and you can't succeed in the foreign countries without knowing English; it is needed for English speaking world; many things are in English;*

- the importance of language in students' studies: *because English is vital to even understand the field because if you can't understand the terms or the materials (most more sophisticated materials tend to be in English) you can't really do anything in the field; maybe it fits your future job; we use English in other cyber lessons; we learn cyber defence.*

Respondents who found the ESP course less important (15% of the respondents) or not important (4%) explained their answer as *regular English is enough; we learn the terms we need in class; learning English in secondary school is totally useless as most people learn through games and films and when they travel.* To sum up, most of the students see the need of learning ESP in secondary school as a tool to help them in their field of study.

To determine the best time to learn ESP in secondary school, the students were asked their opinion about in which form it would be best to study ESP. They had a choice between the forms 10, 11, 12 and 'it makes no difference'. The majority of the students (48% of the respondents) found form 10 to be the most suitable time for learning ESP. The second majority of the respondents (29%) saw no difference in the time when the course was taught.

Form 10 is considered the best for the course, because the respondents saw it as the beginning of their studies and the time to start learning words and terms about cyber defence. A student in form 12 wrote, "*It really doesn't matter that much, but the earlier the better, because it's useful to know the words before you start learning about the things behind it*". Other supportive explanations also stated that learning language before other cyber defence lessons is useful.

While students in forms 10 and 11 suggested only once that learning in form 12 is the best time, the respondents in form 12 chose this option more frequently (27%). They suggested that in form 12 they have more time to study English (and maths, etc.) and another student stated that form 11 might be overwhelming because of the research project students have to finish in that form.

To sum up, according to students' responses, form 10 is the best time to start the language course, as that is the beginning of their studies in the field.

Students subjective opinion about the length of the course was explored in question six and 54% of the students saw 35 academic lessons (the regular length of courses in secondary school) as a sufficient amount of studies. As the course has not been conducted yet, it might be understandable why 42% of the students found they did not know whether it was enough or not.

Question seven was aimed to find out students' subjective needs concerning the ESP course. The question included six options to be rated, including the four language skills (reading, listening, writing and speaking). All options were followed by sample activities in the brackets (Appendix 2). Four preferences – very useful, quite useful, not useful, do not like this method at all – were offered to the respondents. The question also had an open-ended follow-up part where students could add other useful activities for the course. Table 1 shows the responses from the students. As the table demonstrates, the majority of the students found the activities very useful or quite useful, and only giving presentations was not considered equally important.

Table 1. The most useful activities in ESP classes.

The activities in ESP classes	Very useful	Quite useful	Not useful	Do not like this activity
learning technical/specialist terminology	30	16	0	2
reading specialist literature	22	18	3	5
giving presentations	12	22	12	2
developing listening skills	20	23	3	2
developing writing skills	19	19	8	2
developing speaking skills	27	16	3	2

Learning technical and specialist terminology was considered the most useful; 96% of the respondents saw learning terminology as very useful or quite useful and none of them assumed it to be useless.

Additional activities that the students added included watching movies and doing individual work, something to do with computers and using the Internet. In conclusion, the students found the activities included in the questionnaire rather relevant to use in their ESP course.

The learners' subjective needs in their future lives were asked in question 8. Chart 2 shows the respondents' opinions about the relevance of the ESP in their future lives after finishing secondary school.

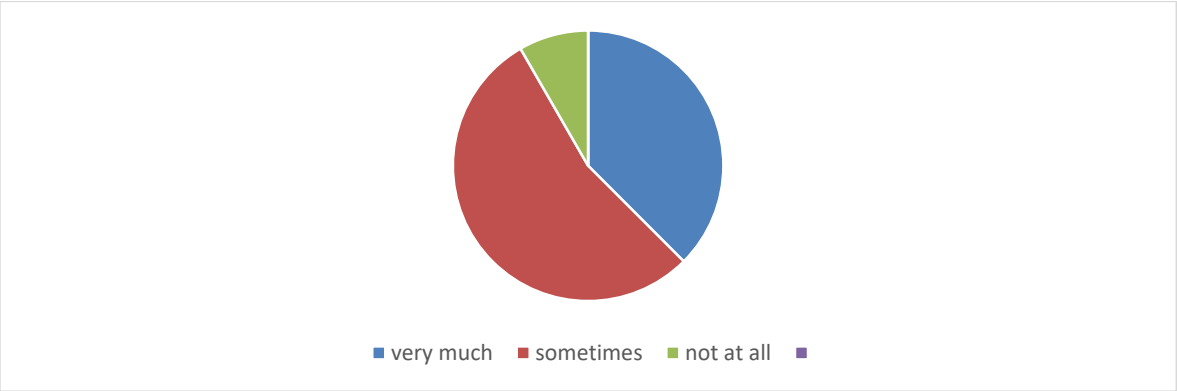

Chart 2. How much do the students think they need ESP in the future?

The chart shows that most of the students (92%) think they need ESP sometimes or very much while 8% of the respondents found it irrelevant in their future lives. The results show that it is appropriate to teach ESP for students in secondary school.

Finally, the students were asked what else could be considered when planning an ESP course. While 16 respondents did not know what to add or answered nothing, seven of them wanted the students' level or skills to be taken into consideration. A student pointed out '*start easy as it could be because some students' level isn't super. It should go from easy to harder/specific'* and another responded '*do not teach college grammar to form 10'.* Five of the students expected to have important and interesting materials and five students thought that the ESP course should work with other lessons and courses (of the field of cyber defence). A student wrote '*maybe the curricula of our cyber defence courses, so these courses would go together nicely.*' Another respondent explained *'I think it would be great to learn terms at the same time as learning the practical side of the terms'*. Although the majority of the students consider the course relevant, two of them have doubts about its necessity by saying that students will not study the field in the future, so the course should be offered only to them who need it.

Based on the needs analysis, it can be concluded that there is a need for the ESP course in Põltsamaa Co-Educational Gymnasium. It is as important as other subjects and therefore, it should be part of students' field of study.

2.2. The design phase

The second phase in ADDIE model is a design phase, where the learning objectives and content is developed. As an ESP teacher is not usually a specialist in the field, it means that specialist teachers need to be engaged in order to design the ESP course using their knowledge of the field. The goals and objectives as well as the syllabus (Appendices 4 and 5) of the course were worked out in collaboration with the specialist teachers in Põltsamaa Co-Educational Gymnasium.

The overall goal was to prepare the students for their future lives and as they have chosen the particular field of study in gymnasium, to provide students with the ability to use a specialised language.

The general objectives of the cyber defence English e-course focus on vocabulary and the terminology related to information technology and cyber defence. The aim is also to develop four language skills through different activities.

The specific objectives were formulated as follows:

On successful completion of the course, students will be able to

- write short descriptions related to information technology and cyber defence (hardware, software, OP systems, etc.), describe problems and offer possible solutions (security and safety), outline advantages and disadvantages of networks and social media.

- read different texts (articles, instructions, explanations) on subject matter, understand the main idea of the text and scan a text for specific information, distinguish between relevant and irrelevant information, summarize the relevant information.
- understand short lectures and instructions (video) related to technology, follow the instructions and find specific information while listening.

All the topics and tasks listed in the syllabus are assessed. Assessment of tasks gives the teacher the possibility to supervise and follow the students' language competence.

2.3. The development phase

The result of the development phase was a complete e-course with a full set of materials and instructions. The ESP course consists of one module and it includes 35 academic hours of independent work. The course is online only and a Moodle environment is used to conduct the course. The course consists of four main topics which are divided into 14 subtopics, which are all assessed. The material starts with more general topics (information technology basics) and common terms. More specific topics follow the basic terminology. All the texts and videos have been chosen to keep focus on cyber defence topics and the topics were chosen in collaboration with specialist teachers in Põltsamaa Co-Educational Gymnasium (IT manager and IT specialist).

The four main topics of the course are information technology basics, networks and the Internet, security and safety, and revision. Every topic is aimed to improve students' reading, listening, and writing skills as well as to improve their vocabulary in the field of cyber defence.

The basics of information technology is an introductory topic, which comprises hardware, software, OP systems, mechatronics and databases. During these lessons students have reading and listening tasks about computers and parts, learn vocabulary about programming, compare and describe different OP systems, complete a writing task on mechatronics and databases.

The second topic concentrates on networks and the Internet. Students compare the pros and cons of different networks, social media and e-commerce. There are tasks about digital culture, digital footprint, and cloud systems.

The security and safety topic includes describing and preventing possible issues with hardware security. The assignments wield cyber defence basics and legislation.

Topic four is revision which includes a vocabulary task, writing a summary of an article and making a presentation in collaboration with other students using the IT skills previously learnt. The vocabulary and terminology task asks students to make their own glossary of the most important words of cyber defence English in their opinion.

Every subtopic has tasks on vocabulary, reading, listening and writing. Vocabulary is practiced through vocabulary games (Quizlet) as it is a simple learning tool that allows students to use flashcards and different games to learn specialist vocabulary (Figure 1). The students considered learning technical and specialist vocabulary very useful (62,5% of respondents) or quite useful (33% of respondents), so learning terminology has a very important part in the e-course.

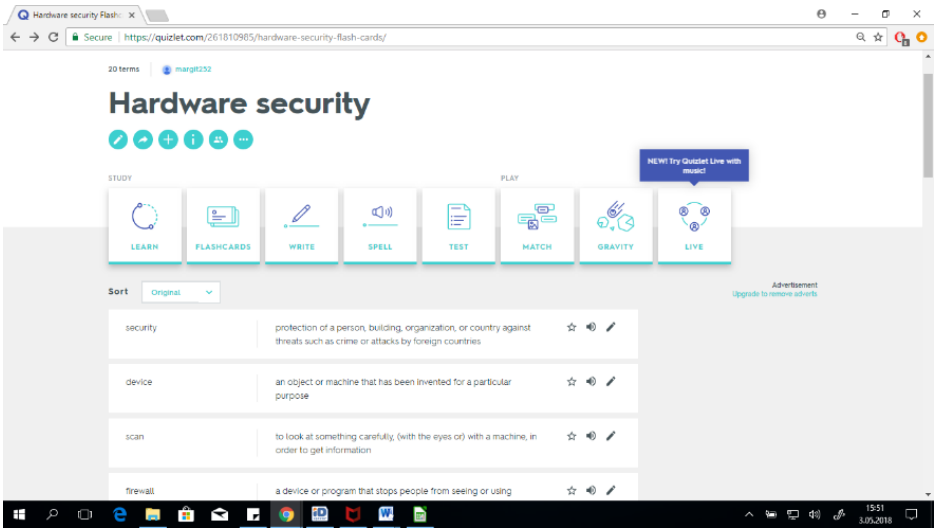

Figure 1. Vocabulary practice in Quizlet.

Listening tasks consisted of video clips from YouTube and TEDtalks, which gave the possibility to practice listening skills and specialist terminology. The videoclips were followed by questions to determine whether students had understood the topic (Figure 2). All the topics have different listening tasks as 90% of students who filled in the needs analysis questionnaire believed it to be very important or quite important and it also helps them to understand the technological spoken language.

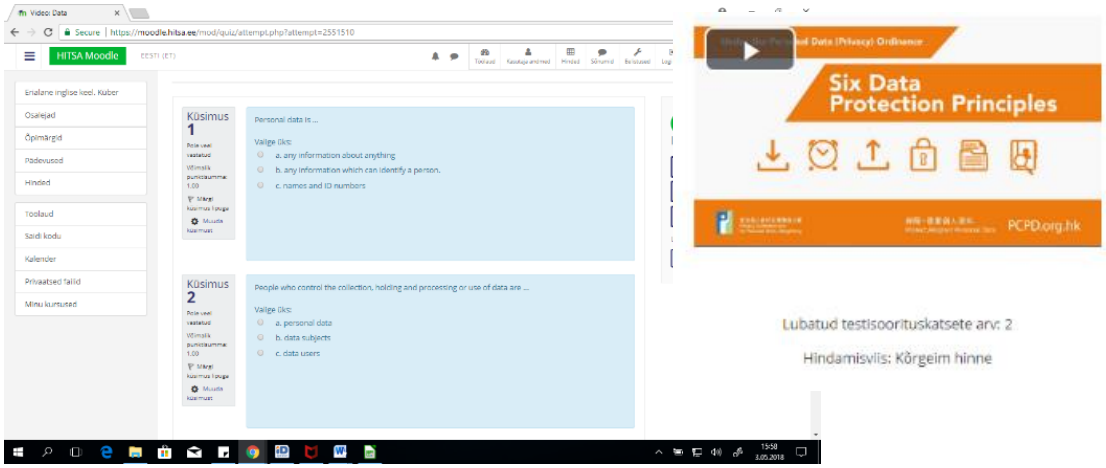

Figure 2. An example of a listening task.

The reading tasks were designed similarly –texts were followed by questions (Figure 3). The texts used in the course were authentic texts from specialist magazines and web-pages. In some cases, they were adapted for clarity and length.

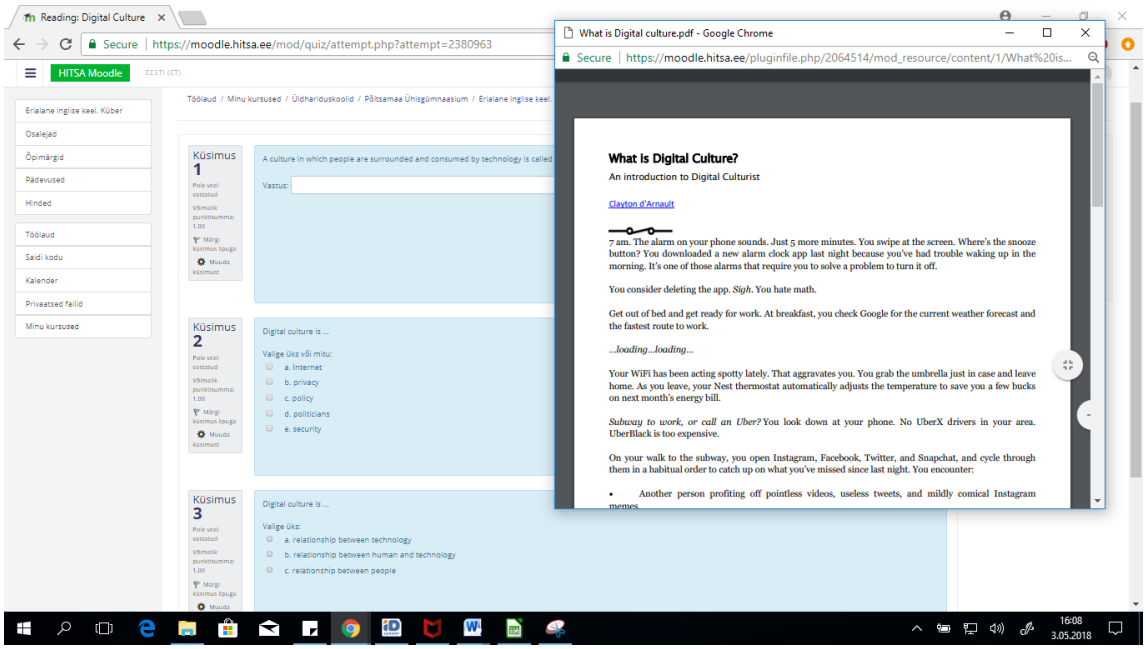

Figure 3. An example of a reading task.

Writing tasks were given to students to assess their use of vocabulary and terminology. Tasks varied from essays (figure 4), descriptions, system comparisons to pointing out the advantages and disadvantages of OP systems and e-commerce, as well as writing about problems and problem-solving.

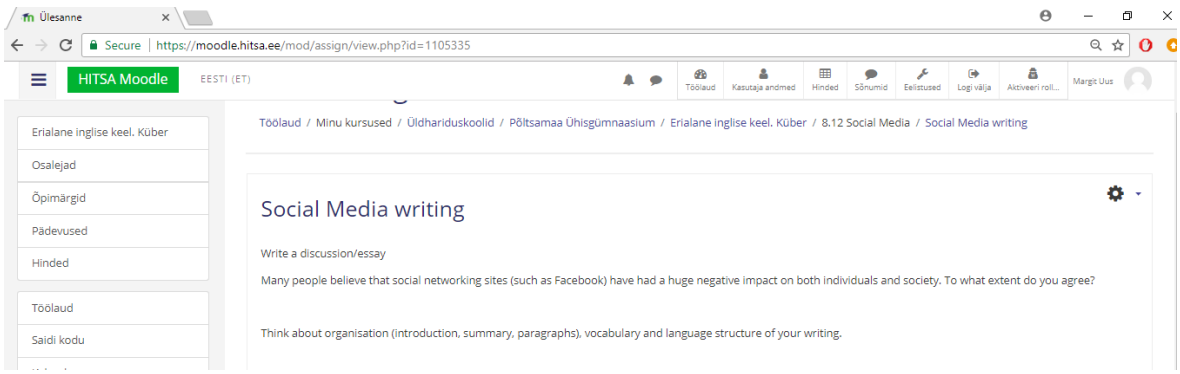

Figure 4. An example of a writing task.

The course consists of existing and available materials (video clips, articles and other reading texts) as well as tailor-made materials such as adapted texts, questions about the texts and video clips, and vocabulary tasks. Both specialist teachers' suggestions and the results of the needs analysis were taken into consideration when designing the course.

2.4. The implementation phase

The course in Moodle was conducted from October to April in Põltsamaa Co-Educational Gymnasium. The students were from forms eleven and twelve. Although the best time for conducting the course in needs analysis was found to be in form 10, the directorate had already decided the course to be conducted by forms 11 and 12. However, the students' opinion will be taken into consideration the following school year.

While conducting the course students were given support by an ESP English teacher and technical support by the IT specialist. The course timeline was flexible, the students were given a final deadline and they could choose their own pace to complete the course. The tasks were assessed and the students were given feedback.

2.5. The evaluation phase

The evaluation was a process throughout entire course. Oral feedback from students was taken into consideration and their preferences and suggestions were used in some cases; for example, separate vocabulary tests were left out and they were incorporated in other exercises.

Internal feedback was collected at the end of the course as the students' feedback questionnaire was carried out.

The questionnaire consisted of two parts and was anonymous. In the first part personal information was requested and in the second part students' opinion of the course was asked (appendix 3). The questionnaire was in English and Google Forms was used to carry it out.

All the students who completed the cyber defence English e-course (forms 11 and 12) were asked to complete the questionnaire, which was sent out in April 2018. There are 32 students altogether in the forms 11 and 12 and all of them answered the questionnaire. There were 17 students from form 12 and 15 students from form 11.

The questionnaire was based on the e-course assessment questionnaire developed by Information Technology Foundation for Education. The personal information section consisted of questions about students' age, sex and form. The second part of the questionnaire (questions four to eight) consisted of five multiple choice grid questions, where the students had to rate the course using four values: completely agree, mostly agree, partly agree and do not agree. The aim of the questionnaire was to find out students' opinions about the course to get the feedback and analyse it for enhancing the existing course.

Question four asked students' opinion about the structure and design of the e-course (Chart 3). The multiple-choice grid question consisted of five statements about the course design.

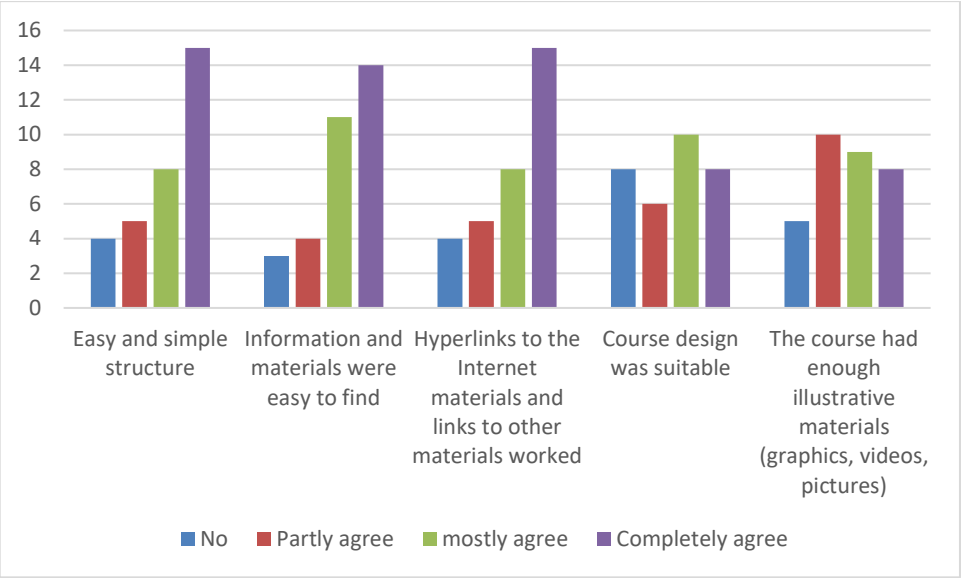

Chart 3. Structure and design of the e-course.

The majority of the students agreed completely (47% of respondents, 15 students) or mostly agreed (25% respondents, 8 students) that the e-course had an easy and simple structure. The information and materials were easy to find in students' opinion (44% completely agreed, 34% mostly agreed). Students agreed completely (47%) that hyperlinks to the materials worked. As there were a few students (four respondents) who found that they did not work, the hyperlinks need to be checked and corrected for future purposes.

Students opinions about the course design were mixed, as they equally agreed and disagreed with the statement (completely agreed 25% and disagreed 25%). The statement about illustrative materials also received mixed responses (16% disagreed, 31% partly agreed, 28% mostly agreed and 25% completely agreed).

The fifth question asked students' opinion about the content of the course. This question consisted of seven statements about the content of the course with multiple choice grids (Chart 4).

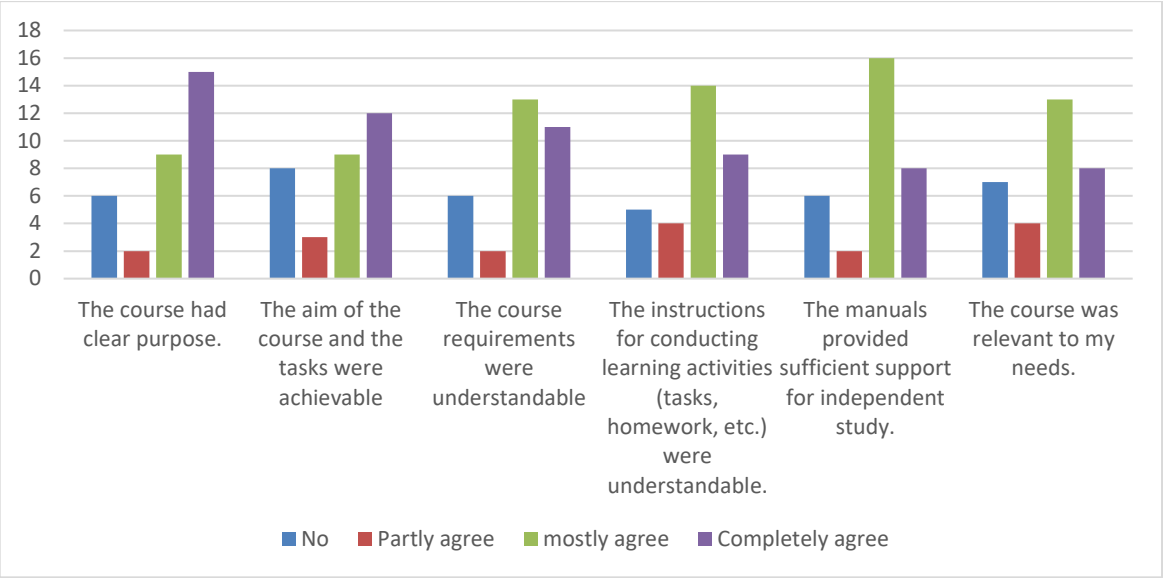

Chart 4. The content of the course.

The first statement under this question was about the availability of the contact information of the teacher. The majority of students agreed completely (47%, 15 respondents) or mostly agreed (28%, 9 respondents) to the statement. Despite that, many students found that the teacher's contact information was not easily displayed. Six respondents (19%) completely disagreed and two respondents (6%) only partly agreed to the statement that the teacher's contact information was available or known. This gives an input for an improvement of the course; the teacher's contact information should be highlighted.

The second statement was about the clarity of the course's purpose. Many students thought the purpose of this course was clear, as they completely agreed (38%, 12 respondents) or mostly agreed (28%, 9 respondents) to this statement. Yet there were some students who did not understand the purpose of this course. 3 respondents (9%) only partly agreed and 8 respondents (25%) completely disagreed to the statement. This indicates that the purpose of the course needs to be clarified.

The third statement represented the achievability of the tasks. 11 students (34%) completely agreed and 13 students (41%) mostly agreed that the aim of the course and the

tasks were achievable. Some students thought the aim of the course was not very achievable, as 2 of them (6%) only partly agreed and 6 of them (19%) completely disagreed with this statement. According to that, the description about the aim of the course needs to be looked over.

The next statement was about understanding the course requirements. Most students thought that the course requirements were understandable. 14 respondents (44%) mostly agreed and 9 respondents (28%) completely agreed to this statement. 9 students did not understand the course requirements very much, as they only partly agreed (4 respondents, 13%) or completely disagreed (5 respondents, 16%) with this statement.

The statement that followed was about instructions for conducting learning activities. Students were mostly satisfied with the instructions; half of them (16 respondents) mostly agreed and 25% (8 respondents) completely agreed that the instructions for conducting learning activities (tasks, homework etc.) were understandable. A quarter of students did not find the instructions comprehensible. 2 students (6%) only partly agreed and 6 students (19%) completely disagreed with the statement.

The next statement was about sufficiently supportive course manuals. Two thirds of the respondents found that the manuals provided sufficient support for independent study as 25% (8 respondents) completely agreed and 41% (13 respondents) mostly agreed to this statement. One third of respondents were not satisfied with the manuals; 13% (6 respondents) only partly agreed and 22% (7 respondents) completely disagreed with the statement.

The final statement under this question was about the course's relevance to students' needs. This statement had mixed responses as students equally agreed (28%) and disagreed

(28%) to this statement. 31% (10 students) mostly agreed and 13% (4 students) partly agreed that this course was relevant to their needs.

Question six was about the materials of the e-course and it consisted of three statements with multiple choice grids (Chart 5).

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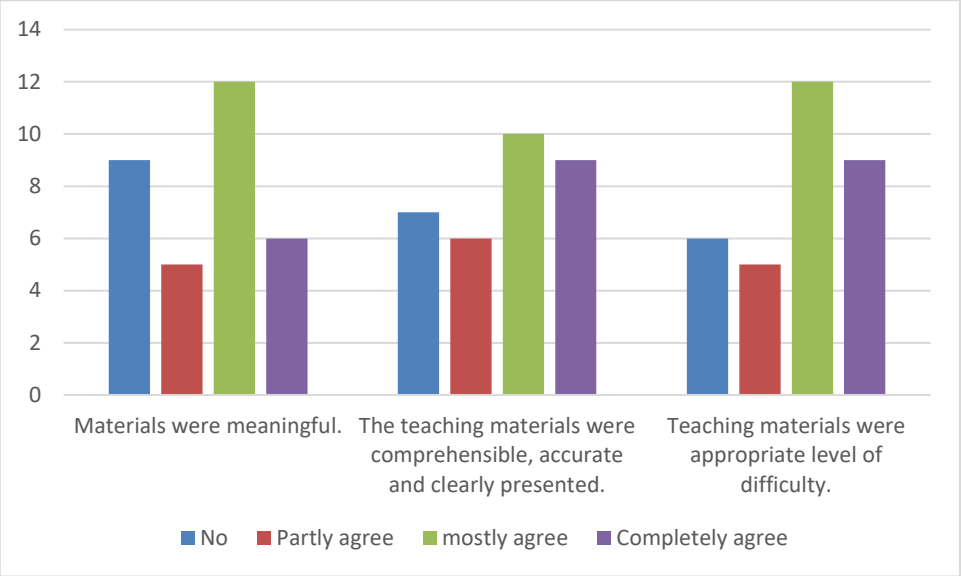

Chart 5. The materials of the course

The first sentence stated that the learning materials were meaningful. The answers were split nearly in half, 56% found the materials meaningful as 38% (12 respondents) mostly agreed and 19% (6 respondents) completely agreed to the statement. 16% (5 respondents) only partly agreed and 28% (9 respondents) completely disagreed with that statement. For future courses, the content of materials should be revised to make it more meaningful for students by reviewing the materials and altering the tasks in cooperation with the specialist teachers.

The second statement asked students' opinion about the comprehensibility, accuracy and clarity of the teaching materials. The responses were divided rather equally between all

four options. 31% (10 respondents) mostly agreed and 28% (9 respondents) completely agreed that the teaching materials were comprehensible, accurate and clearly presented. 22% (7 respondents) completely disagreed and 19% (6 respondents) only partly agreed with this statement.

The last statement under this question was about the level of difficulty of the teaching materials. Nearly two thirds of the students thought the materials were at an appropriate level of difficulty, as 38% (12 respondents) mostly agreed and 28% (9 respondents) completely agreed with the statement. 19% (6 respondents) completely disagreed and 16% (5 respondents) partly agreed with this statement.

The tasks offered in the course were assessed by the students in question seven (Chart 6). Six different statements asked the students' opinion on whether the tasks were interesting and related to real life; well suited to the content of course; at a suitable level of difficulty; whether the number of tasks to be assessed was enough; and whether the course materials and learning activities corresponded to the volume of the course. Students mostly agreed to all statements, answers varied from 34% to 41% (11 to 13 respondents). It was the most popular selection for all the given statements. The completely agree option was the next popular answer about the four given statements. On the first statement 9 students (28%) completely disagreed that the materials were interesting and related to real life, and that made it the second popular selection. On the last statement students equally agreed and disagreed (25%) that the materials and learning activities corresponded to the volume of the course.

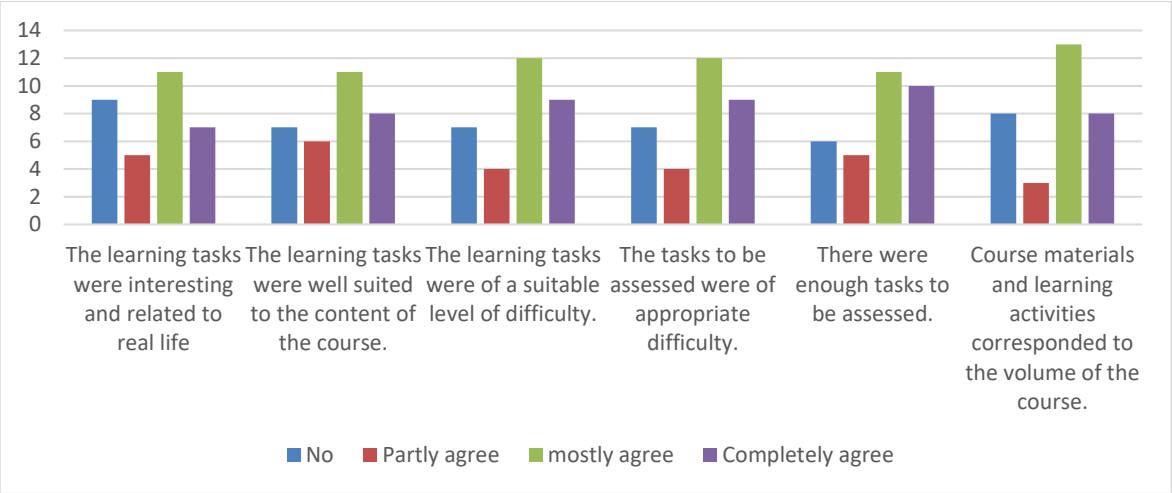

Chart 6. Tasks

Question eight asked about conducting the course, using five statements about course organisation, schedule flexibility, learning style, feedback and motivation (Chart 7).

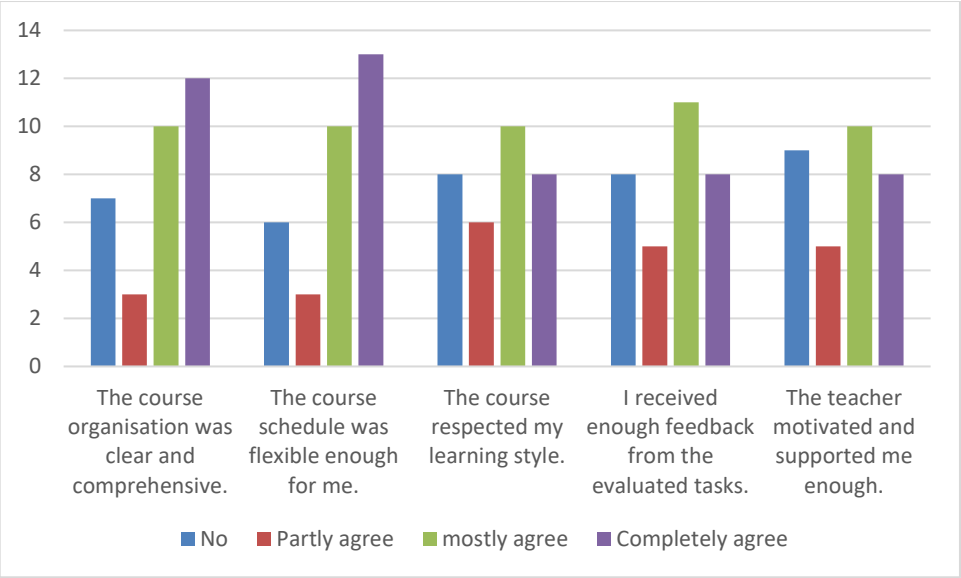

Chart 7. Conducting the course.

The first two statements had very similar responses. Most students completely agreed (38% and 41%, respectively) that the course organisation was clear and comprehensive; and the course schedule was flexible enough. 31% of students mostly agreed and 9% of students

partly agreed with both statements. Respectively 22% and 19% of students completely disagreed to the statements.

The next sentence stated that the course respected students' learning style, and it received mixed responses. 31% of respondents mostly agreed with this statement, while equally 25% of respondents completely agreed and disagreed with this statement. 19% of respondents partly agreed.

The last two statements were about feedback and motivation. Many students mostly agreed that they received enough feedback from the evaluated tasks (11 respondents, 34%) and the teacher motivated and supported them enough (10 respondents, 31%). Equally 25% completely agreed and completely disagreed with having received enough feedback. 28% completely disagreed that teacher motivated and supported them enough while 25% completely agreed to the same statement.

A few completed questionnaires emerged where respondents only completely disagreed to all statements. Either they were completely dissatisfied with the whole course, or they took the questionnaire as an annoying obligation and filled out the form without reading the statements. All negative feedback should be evaluated to make the course better, but to avoid filling out the form without reading, there some open questions or required explanations should be added for clarifying negative feedback. Also, some questions could be presented in negative wording way or to add some data validation.

In conclusion, there are improvements and enhancements to make for the e-course. The course design and illustrative materials need some revising despite that the students agreed with the course to have a simple and easy structure. Although the content of the course was mostly considered understandable, the general information (the teacher's contact

information, the purpose of the course, etc.) should be highlighted for the future use to make it more easily to be found for the students.

The materials of the course need constant revising as the world of technology is evolving fast and all the materials should always be up-to-date and appropriate. In addition to that, the teaching materials need to be modified in order to be comprehensible, accurate, and clearly presented as some of the students, who passed the course, found this part of the e-course rather unsatisfactory.

Reviewing the tasks is equally important as a few of the students found them not to be interesting and related to real life. These tasks need some reviewing with the specialist teachers in order to present students the best learning experience.

Significant work needs to be done with in the field of assessment and evaluation to meet the students' needs. The feedback to the students should be motivating and supporting as well as continuous.

As the language proficiency of the students varies, it is clear that online learning with its flexibility and the possibility to access the materials all the time is suitable for the students to learn an ESP course.

CONCLUSION

The main purpose of the current MA thesis "Designing English for Specific Purposes E-course for Cyber Defence Students at Põltsamaa Co-Educational Gymnasium" was to examine theoretical principles for e-course design, to design and conduct an ESP e-course for students in the field of cyber defence in Põltsamaa Co-Educational Gymnasium and to assess the feedback of students. The previous studies of designing ESP courses have not dealt with the current subject. The study was also derived from the author's personal and school directorate' s interest to teach an ESP course for students in the field of cyber defence as Põltsamaa Co-Educational Gymnasium has been the first to offer cyber defence courses for upper-secondary school students.

The introduction of the MA thesis explains the main reasons for choosing the topic for the thesis. The relevance of the ESP course as a part of school's curriculum was explained. The meaning of ESP as a subject to be taught was discussed. Since the course was planned as an e-learning course, the latter was explained and its advantages were examined in the introduction of the MA thesis.

The theoretical part of the thesis (Chapter 1) was devoted to the literature review. Syllabi and syllabus design was discussed and among the various syllabi, a combination of the teacher and organisational syllabus was chosen for the course to be designed in the framework of this MA thesis. Technology and its importance in teaching and ESP course were also discussed. The Internet and its abundance of authentic materials as well as different tools and platforms that allow learning online were believed to improve learning and teaching process. It was noted that also technology did not guarantee motivation and better learning outcomes, studies affirmed that it might improve them. Moodle, as one of the most

popular open-source learning management tools, was chosen as a platform for the course to be created.

The theoretical part also explored the models for creating an e-course. The ADDIE (analyse, design, development, implement, evaluation) model was chosen as a method to design the e-course for cyber defence students in Põltsamaa Co-Educational Gymnasium. The model mentioned above is also used by the Information Technology Foundation for Education (HITSA in Estonian) in their instructions to create a high quality e-course.

The empirical part (Chapter 2) of the thesis was designed to follow the ADDIE course discussed in chapter one to design an e-course. The analysis phase introduced the methodology and the results of the study carried out in this thesis in the academic year 2017-2018. The data collection instrument for students' needs analysis in the analysis phase was a questionnaire among students in Põltsamaa Co-Educational Gymnasium in the field of cyber defence. The analysed data provided the teacher with the useful insights into the ways of learning the students preferred in order to create an ESP course and the findings supported the view of the school's directorate to teach the ESP course for the students. The design phase stated the overall goals and objectives of the e-course to be conducted which were worked out in collaboration with the specialist teachers. The result of the development phase was a complete set of materials and instructions and the topics and example tasks were presented. The implementation phase, the conduction of the course, took place from October to April among students in form 11 and 12. The final phase, the evaluation phase introduced the methodology and the results of the students' feedback questionnaire carried out in April 2018. The data analysis provided the teacher with useful information for future improvement of the e-course. Although the majority of the students agreed that the course had easy and simple structure, the course design and illustrative materials needed some enhancement. The content of the course was mostly considered understandable. Despite that, the general

information (teacher's contact information, purpose, etc.) of the course should be highlighted for the future use. Finally, the materials of the course and the tasks need constant revising and improvement in cooperation with specialist teachers to keep the course up-to-date and relevant for the students. Considerably more work should be done in the field of evaluation and assessment to meet the students' needs. As the language proficiency of the students varies, online learning possibilities seems to be suitable for them as it provides flexibility and the possibility to access the materials whenever they need and wherever it is possible for them to learn.

Designing an ESP course with its goals, objectives, syllabus, and content is a time-consuming process which has to be reviewed and renewed constantly in order to maintain the accuracy and the quality of the course. Despite the continuous work, the flexibility and the accessibility improve the learning and teaching.

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APPENDICES

Appendix 1 Needs analysis framework

Hutchinson and Waters (1987)

Target needs	Learning needs
Why is the language needed? • for study; • for work; • for training; • for a combination of these; for some ohter purposes, e.g. status, examination, promotion.	Why are the learners taking he course? • compulsory or optional; • apparent need or not; • are status, money, promotion involved? • What the learners think they will achieve? • What is their attitude towards the ESP course? Do they want to improve their English or do they resent the time they have to spend on it?
How will the language be used? • Meedium: speaking writing, reading, etc.; • channel: e.g. telephone, face-to-face; • types of text or discourse: e.g. academic texts, lectures, informal conversations, technical manuals, catalogues.	How do the learners learn? • What is their learning background? • What is their concept of teaching and learning? • What methodology will appeal to them? • What sort of techniques are likely to bore alienate them?
What will the content areas be? • subjects: e.g. medicine, biology, architecture, shipping, commerce, engineering; • level: e.g. technician, craftsman, postgraduate, secondary school.	What resources are available? • number and professional competence of teachers; • attitude of teachers to ESP; • teacher's knowledge and attitude to the subject content; • materials; • aids; • opportunities for out of class activities.
Who will the learners use the language with? • native speakers or non-native; • level of knowledge of receiver: e.g. expert, layman, student; • relationship: e.g. colleague, teacher, customer, superior, subordinate..	Who are the learners? • age / sex/ nationality; • What do they already know about English? • What subject knowledge do they have? • What are their interests? • What is their socio-cultural background? • What teaching styles are they used to? • What is their attitude to English or to the cultures of the English-speaking world?
Where will the language be used? • physical setting: e.g. office, lecture, theatre, hotel, workshop, library; • human context: e.g. alone, meetings, demonstrations, on telephone; • linguistic context: e.g. in own country, abroad.	Where will the ESP course take place? • Are the surroundings pleasant, dull, noisy, cold, etc?
When will the language be used? • Concurrently with ESP course or subsequent? • Frequently, seldom, in small amount, in large chunks.	When will the ESP course take place? time of day; • every day / once a week; • full-time / part-time; • concurrent with need or pre-need.

Appendix 2. The Students' Questionnaire

Students questionnaire

Dear Student,
I am doing a research in teaching English for specific purposes (ESP) for my master's thesis, the aim of which is to design materials for students of cyber defence in Põltsamaa Co-Educational Gymnasium. The reason I ask you to answer the questionnaire is to find out the students' learning needs for an ESP course. As you are studying cyber defence; I am interested in your opinion and suggestions on teaching ESP in Põltsamaa.
I would be very grateful if you could take some time to answer the questions below.
Your honest answers are very important for my results.
Thank you!

* Required

1. Age *

_____

2. Sex: *

Mark only one oval.

- ◯ Male
- ◯ Female

3. You are in: *

Mark only one oval.

- ◯ form 10
- ◯ form 11
- ◯ form 12

4. How important do you find teaching English for specific purposes (ESP) at secondary school? *

Mark only one oval.

- ◯ more important than many other subjects
- ◯ as important as other subjects
- ◯ less important than other subjects
- ◯ not important at all

Explain your answer

_____

_____

_____

_____

_____

5. When is the best time to attend the ESP course? *

Mark only one oval.

- ◯ form 10
- ◯ form 11
- ◯ form 12
- ◯ It makes no difference

Explain your answer

_____

_____

_____

_____

_____

6. Do you find 35 ESP lessons a sufficient amount of studies? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Do not know
- ◯ Other: _____

7. Which of the following activities do you find most useful during your ESP course? Use the following scale in your evaluation: *

Mark only one oval per row.

	very useful	quite useful	not useful	do not like this method at all
learning technical/specialist terminology (e.g. hardware, software)	◯	◯	◯	◯
reading specialist literature (e.g. manuals, instructions)	◯	◯	◯	◯
giving presentations	◯	◯	◯	◯
developing listening skills (e.g. filling in, answering questions)	◯	◯	◯	◯
developing writing skills (e.g. reports, instructions)	◯	◯	◯	◯
developing speaking skills (e.g safety and security, giving instructions)	◯	◯	◯	◯

What other useful activities would you like to add?

_____

_____

_____

_____

_____

8. How much do you think you will need English for specific purposes in the future (after finishing secondary school)? *

Mark only one oval.

- very much
- sometimes
- not at all

9. What else should be taken into account when planning an ESP course? *

Appendix 3. The Students' Feedback Questionnaire

Feedback to the e-course

Dear Student,
I am doing a research in teaching English for specific purposes (ESP) for my master's thesis, the aim of which is to design materials for students of cyber defence in Põltsamaa Co-Educational Gymnasium. The reason I ask you to answer the questionnaire is to find out the students' opinion of the cyber defence English e-course. As you are studying cyber defence and you completed the course, I am interested in your feedback.
I would be very grateful if you could take some time to answer the questions below.
Your honest answers are very important for my results.
Thank you!

* Required

1. **You are in** *
Mark only one oval.

- ◯ form 11
- ◯ form 12
- ◯ Other: _____

2. **Age** *

_____

3. Sex: *
Mark only one oval.

- ◯ male
- ◯ female

4. **Structure and design of the e-course** *
Mark only one oval per row.

	no	partly agree	mostly agree	completely agree
Easy and simple structure	◯	◯	◯	◯
Information and materials were easy to find	◯	◯	◯	◯
Hyperlinks to the Internet materials and links to other materials worked	◯	◯	◯	◯
Course design was suitable	◯	◯	◯	◯
The course had enough illustrative materials (graphics, videos, pictures)	◯	◯	◯	◯

5. **Content of the course** *

Mark only one oval per row.

	no	partly agree	mostly agree	completely agree
Contact information of the teacher was available/known.				
The course had clear purpose.				
The aim of the course and the tasks were achievable				
The course requirements were understandable				
The instructions for conducting learning activities (tasks, homework, etc.) were understandable.				
The manuals provided sufficient support for independent study.				
The course was relevant to my needs.				

6. **Materials** *

Mark only one oval per row.

	no	partly agree	mostly agree	completely agree
MAterials were meaningful.				
The teaching materials were comprehensible, accurate and clearly presented.				
Teaching materials were appropriate level of difficulty.				

7. **Tasks** *

Mark only one oval per row.

	no	partly agree	mostly agree	completely agree
The learning tasks were interesting and related to real life				
The learning tasks were well suited to the content of the course.				
The learning tasks were of a suitable level of difficulty.				
The tasks to be assessed were of appropriate difficulty.				
There were enough tasks to be assessed.				
Course materials and learning activities corresponded to the volume of the course.				

8. **Conducting the course** *

Mark only one oval per row.

	no	partly agree	mostly agree	completely agree
The course organisation was clear and comprehensive.	◯	◯	◯	◯
The course schedule was flexible enough for me.	◯	◯	◯	◯
The course respected my learning style.	◯	◯	◯	◯
I received enough feedback from the evaluated tasks.	◯	◯	◯	◯
The teacher motivated and supported me enough.	◯	◯	◯	◯

Appendix 4. Course syllabus in English

English for Specific Purposes: Cyber Defence

Elective course in Põltsamaa Co-Educational Gymnasium

1. Learning and educational objectives

On successful completion of the course, students

- know and are able to use vocabulary and the terminology related to information technology and cyber defence;
- can read different texts (articles, instructions, explanations) on subject matter, understand the main idea of the text and scan a text for specific information, distinguish between relevant and irrelevant information, summarize the relevant information;
- can understand short lectures and instructions (video) related to technology, follow the instructions and find specific information while listening;
- can write texts related to information technology and cyber defence using adequate vocabulary.

2. Brief description of the course

The course is divided into four main topics.

1) Information technology basics
    a. Hardware
    b. Software
    c. Computer systems
    d. Databases, data breaches
    e. Mechatronics
2) Networks and Internet
    a. Digital Culture
    b. Networks and Internet
    c. Social Media
    d. E-commerce
    e. Cloud Systems
3) Safety and Security
    a. Hardware security
    b. Cyber Defence Basics
    c. Legislation
4) Conclusion

3. Learning activities

Learning activities will be done independently in the Moodle environment.

4. Physical Environment

Learning activities will be done independently in the Moodle environment. If necessary, it is possible to use school computer lab and internet connection.

5. Assessment

The assessment is based on the relevant general provisions of the national curriculum for upper secondary schools. The purpose of the evaluation and assessment of learning outcomes is to get an overview of the achievement of learning outcomes and the individual development of the student, and use the information obtained to design more effective learning.

Students' theoretical knowledge and practical skills are tested and evaluated.

Learning outcomes are assessed by the estimated grades (passed/failed). The grade of the course will take the form of the summary of various reading, writing, listening, and vocabulary tasks. All the tasks in the e-course must be fulfilled in order to complete the study process and obtain the grade 'passed'.

6. Content and learning outcomes

TOPIC	LEARNING OUTCOMES	H	Learning content and terminology	ASSESSMENT
Hardware	Students know and can use hardware related vocabulary. They are able to find necessary information by reading and listening. They can describe using the relevant vocabulary.	2	Hardware, computer introduction	Computer description, hardware description, reading hardware specification.
Software	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can describe different software.	2	Programming, software	Software description, usefulness, reading and listening.
Computer Systems	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and	2	OP systems	System comparison, reading and listening tasks.

	listening. They can describe different OP systems.			
Databases, Data Breaches	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can describe using relevant information.	2	Database, saving data, data processing, data breach	Data specification, data breaches, description; reading and listening tasks.
Mechatronics	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can describe using relevant vocabulary.	2	Mechatronics, drones, future technology	Writing, listening and reading tasks.
Digital Culture	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can describe using relevant vocabulary.	2	Digital culture, digital footprint	Digital culture – summarising the topic, the importance of it; listening and reading tasks.
Networks and Internet	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can bring out advantages and disadvantages of networks and describe how to minimize disadvantages.	2	Networks, Internet, websites	Advantages and disadvantages of a network, minimizing the disadvantages; listening and reading tasks.
Social Media	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can bring out advantages and disadvantages of social media using relevant vocabulary.	2	Social media	The impact of social media on individuals and society; listening and reading tasks.
E-commerce	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. Students can write a discussion using subject vocabulary.	2	E-commerce	Advantages and disadvantages of e-commerce. Dangers of e-commerce, e-commerce habits; listening and reading tasks.
Cloud Systems	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. Students can discuss using the subject vocabulary.	2	Cloud systems, data	Writing, listening and reading tasks.

Hardware Security	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can describe problems and steps to prevent them.	2	Hardware, security	Examples of hardware security, effectiveness; listening and reading tasks.
Cyber Defence Basics	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. They can describe situation using subject vocabulary.	2	Cyber defence	The biggest problems in today's world; listening and reading tasks.
Legislation	Students know and can use the vocabulary of the topic. They are able to find the necessary information by reading and listening. Students can discuss using the subject vocabulary.	2	legislation	Writing, listening and reading tasks.
Conclusion	Students can read articles and write one. Can make a presentation on the topic.	4		Analysis on an article, presentation.
Vocabulary	Students know and can use the vocabulary	3		Glossary of the most important words.

Appendix 5. Course syllabus in Estonian

Erialane inglise keel: küberkaitse

Gümnaasiumi valikkursus

1. *Õppe- ja kasvatuseesmärgid*

Õppekava läbinud õpilane:

- teab ja tunneb inglise infotehnoloogia ning küberkaitsealast terminoloogiat ning oskab seda kasutada igapäevaolukorras.
- oskab lugeda erialaseid tekste ning teha kokkuvõtteid, leida mitmesuguste tekstide (uudiste, artiklite, aruannete) sisu ja olulisemaid punkte.
- saab aru teemakohastest loengutest ning vestlustest (video).
- oskab koostada tekste vastaval teemal kasutades vastavat sõnavara.

2. *Kursuse lühikirjeldus*

Kursus on jaotatud 4 teemaplokiks:

1) Infotehnoloogia alused
    a. Riistvara
    b. Tarkvara
    c. Arvutisüsteemid
    d. Andmebaasid; andmelekked
    e. Mehhatroonika
2) Võrgud ja Internet
    a. Digitaalne kultuur
    b. Võrgud ja Internet
    c. Sotsiaalmeedia
    d. E-kaubandus
    e. Pilvesüsteemid
3) Turvalisus
    a. Riistvara turvalisus
    b. Küberkaitse alused
    c. Seadusandlus
4) Kokkuvõte

3. *Õppetegevus*

Õppetegevus toimub iseseisvalt Moodle keskkonnas.

4. *Füüsiline keskkond*

Õppetegevus toimub iseseisvalt Moodle keskkonnas. Vajadusel on võimalik kasutada kooli arvutiklasse ning Internetiühendust.

5. Hindamine

Hindamisel lähtutakse vastavatest gümnaasiumi riikliku õppekava üldosa sätetest. Õpitulemuste kontrolli ja hindamise eesmärk on saada ülevaade õpitulemuste saavutatusest ja õpilase individuaalsest arengust ning kasutada saadud teavet õppe tulemuslikumaks kavandamiseks.

Kontrollitakse ja hinnatakse õpilase teoreetilisi teadmisi ja praktiliste tööde tegemise oskusi.

Õpitulemusi hinnatakse peamiselt arvestusliku hindega (arvestatud/mittearvestatud). Kursuse hinne kujuneb erinevate lugemis-, kirjutamis-, kuulamis- ning sõnavaraülesannete kokkuvõttest. Õppe läbimiseks ja arvestuse saamiseks peavad olema kõik ülesanded e-kursuses täidetud.

6. Õppesisu ja õpitulemused

TEEMA	ÕPITULEMUSED	T	Õpisisu ja mõisted	HINDAMINE
Riistvara	Õpilane teab ja oskab kasutada riistvaraga seotud sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.	2	Riistvara, arvuti tutvustus	Arvuti tutvustus, riistvara tutvustus lugemine, kuulamine
Tarkvara	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada tarkvara.	2	Programmeerimine, tarkvara kirjeldus	Tarkvara tutvustus kuulamine ja lugemine; tarkvara kirjeldus
Arvuti-süsteemid	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada OP süsteemi.	2	OP süsteem, võrdlus	Süsteemide võrdlus, lugemis- ning kuulamis-ülesanne.
Andme-baasid, andmelekked	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.	2	Andmebaas, andmete salvestamine ning töötlus, andmeleke	Andmelekked, kirjeldus; lugemis- ning kuulamis-ülesanne.

Mehha-troonika	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.	2	Mehhatroonika, droonid, tuleviku-tehnoloogia	Kirjutamis-, lugemis- ning kuulamisülesanne.
Digitaalne kultuur	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.	2	Digitaalne kultuur, digitaalne jalajälg	Kirjutamis-, lugemis- ning kuulamisülesanne.
VÕRGUD JA INTERNET	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab tuua välja võrgustike puudusi ning eeliseid, kuidas minimeerida puudusi.	2	Võrgustik, erinevad osad, puudused, eelised, Internet, veebilehed	Võrkude puudused ja eelised; lugemis- ning kuulamisülesanne.
Sotsiaal-meedia	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab välja tuua sotsiaalmeedia eeliseid ja puuduseid kasutades teemakohast sõnavara.	2	Sotsiaalmeedia	Sotsiaalmeedia mõju kirjeldus; lugemis- ning kuulamisülesanne.
E-kaubandus	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjutada arutlust kasutades teemakohast sõnavara.	2	E-kaubandus	E-kaubanduse eelised ja puudused; lugemis- ning kuulamis-ülesanne.
Pilve-süsteemid	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab arutleda kasutades teemakohast sõnavara.	2	Pilvesüsteem, andmed	Kirjutamis-, lugemis- ning kuulamisülesanne.
Riistvara turvalisus	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada probleeme ning samme nende ennetuseks.	2	Riistvara, turvalisus	Kirjutamis-, lugemis- ning kuulamisülesanne.
Küberkaitse alused	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.	2	Küberkaitse	Kirjutamis-, lugemis- ning kuulamisülesanne.

Seadusandlus	Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab arutleda kasutades teemakohast sõnavara.	2		Kirjutamis-, lugemis- ning kuulamisülesanne.
Kokkuvõte	Oskab lugeda teemakohaseid artikleid ning kirjutada artikli analüüsi. Oskab teha teemakohast esitlust.	4		Artikli analüüs ning esitlus teema kohta
Sõnavara	Õpilane teab ja oskab kasutada teemakohast sõnavara.	3		Olulisematest sõnadest lühisõnastiku koostamine

6.1. Õppeprotsessi kirjeldus

Iga teema koosneb:

- sõnavara harjutamisest ja testist (harjutada saab quizleti keskkonnas)
- lugemistekstist ja testist selle kohta
- kuulamisülesandest (video) ja testist selle kohta
- kirjutamisülesandest.

6.1.1. **Riistvara Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada riistvaraga seotud sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.

Õpisisu: Riistvara, arvuti tutvustus

Praktiline osa: arvuti ning riistvara tutvustus

Hindamisvõimalus: Arvuti tutvustus, riistvara tutvustus, lugemine, kuulamine

6.1.2. **Tarkvara Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada tarkvara

Õpisisu: Programmeerimine, tarkvara kirjeldus

Praktiline osa: tarkvara kirjeldus

Hindamisvõimalus: Tarkvara tutvustus kuulamine ja lugemine; tarkvara kirjeldus

6.1.3. **Arvutisüsteemid. Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada OP süsteemi.

Õpisisu: OP süsteem, võrdlus

Praktiline osa: süsteemide võrdlus

Hindamisvõimalus: Süsteemide võrdlus, lugemis- ning kuulamisülesanne.

6.1.4. **Andmebaasid. Maht: 2** tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.

Õpisisu: Andmebaas, andmete salvestamine ning töötlus, andmeleke

Praktiline töö: Andmelekked, kirjeldus

Hindamisvõimalus: Andmelekked, kirjeldus; lugemis- ning kuulamisülesanne

6.1.5. **Mehhatroonika . Maht: 3** tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.

Õpisisu: Mehhatroonika, droonid, tulevikutehnoloogia

Hindamisvõimalus: Kirjutamis-, lugemis- ning kuulamisülesanne.

6.1.6. **Digitaalne kultuur. Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.

Õpisisu: Digitaalne, kultuur, digitaalne jalajälg

Hindamisvõimalus: Kirjutamis-, lugemis- ning kuulamisülesanne.

6.1.7. **Võrgud ja internet. Maht: 2 tundi**

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab tuua välja võrgustike puudusi ning eeliseid, kuidas minimeerida puudusi

Õpisisu: Võrgustik, erinevad osad, puudused, eelised, Internet, veebilehed

Praktiline ülesanne: võrkude puudused ja eelised, puuduste minimeerimine

Hindamisvõimalus: Võrkude puudused ja eelised; lugemis- ning kuulamisülesanne.

6.1.8. **Sotsiaalmeedia. Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab välja tuua sotsiaalmeedia eeliseid ja puuduseid kasutades teemakohast sõnavara.

Õpisisu: Sotsiaalmeedia

Praktiline osa: sotsiaalmeedia mõju kirjeldus

Hindamisvõimalus: Sotsiaalmeedia mõju kirjeldus; lugemis- ning kuulamisülesanne.

6.1.9. **E-kaubandus. Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjutada arutlust kasutades teemakohast sõnavara.

Õpisisu: e-kaubandus

Praktiline ülesanne: e-kaubanduse eelised ja puudused

Hindamisvõimalus: e-kaubanduse eelised ja puudused; lugemis- ning kuulamisülesanne.

6.1.10. **Pilvesüsteemid. Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab arutleda kasutades teemakohast sõnavara.

Õpisisu: Pilvesüsteem, andmed

Hindamisvõimalus: Kirjutamis-, lugemis- ning kuulamisülesanne.

6.1.11. **Riistvara turvalisus. Maht:** 2 tundi

Õpitulemus: õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot .Oskab kirjeldada probleeme ning samme nende ennetuseks.

Õpisisu: Riistvara, turvalisus

Praktiline ülesanne: Probleemide kirjeldus ning ennetus

Hindamisvõimalus: Kirjutamis-, lugemis- ning kuulamisülesanne.

6.1.12. **Küberkaitse alused. Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab kirjeldada kasutades teemakohast sõnavara.

Õpisisu: küberkaitse

Praktiline osa: oskab kirjeldada probleemi ning selle lahendusi

Hindamisvõimalus: Kirjutamis-, lugemis- ning kuulamisülesanne.

6.1.13. **Seadusandlus. Maht:** 2 tundi

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara. Oskab lugedes ning kuulates leida vajalikku infot. Oskab arutleda kasutades teemakohast sõnavara.

Õpisisu: seadusandlus

Hindamisvõimalus: Kirjutamis-, lugemis- ning kuulamisülesanne.

6.1.14. **Kokkuvõttev sõnavara. Maht:** 3 tundi.

Õpitulemus: Õpilane teab ja oskab kasutada teemakohast sõnavara.

Hindamine Olulisematest sõnadest lühisõnastiku koostamine

6.1.15. **Kokkuvõte. Maht:** 4 tundi.

Õpitulemus: Oskab lugeda teemakohaseid artikleid ning kirjutada artikli analüüsi. Oskab teha teemakohast esitlust.

Hindamine: artikli analüüs, esitlus

RESÜMEE

TARTU ÜLIKOOL

ANGLISTIKA OSAKONG

Margit Uus

DESIGNING AN ENGLISH FOR SPECIFIC PURPOSES E-COURSE FOR CYBER DEFENCE STUDENTS AT PÕLTSAMAA CO-EDUCATIONAL GYMNASIUM

Erilalase inglise keele kursuse koostamine küberkaitse suuna õpilastele Põltsamaa Ühisgümnaasiumis,

Magistritöö

2018

Lehekülgede arv: 73

Annotatsioon:

Antud magistritöö eesmärk on Põltsamaa Ühisgümnaasiumi küberkaitse suuna pilastele erialase inglise keele ekursuse teoreetiline ja praktiline planeerimine; kursuse koostamine, läbiviimine ja tagasiside analüüs. Huvi antud teema vastu tekkis praktilisest vajadusest kuna Põltsamaa Ühisgümnaasium on esimene kool Eestis, kes pakub õpilastele küberkaitse suunal õppimist. Erialane suund koosneb akadeemilisest õppest, mis on seostatud praktiliste tegevustega ning kooli juhtkond otsustas pakkuda õpilastele erialase inglise keele kursust suunaõppe osana. Seetõttu on vaja leida, koostada ning kohandada teemakohased materjalid, kuna erialase inglise keele õpikud ning õppematerjalid puuduvad.

Antud magistritöö koosneb neljast osast. Sissejuhatus selgitab teema valimise põhjuseid ning annab ülevaate erialase inglise keele tähendusest. Kuna kursus on planeeritud e-õppena, siis sissejuhatus selgitab selle tähendust ning eeliseid.

Esimene peatükk kirjeldab ja analüüsib teoreetilisi printsiipe, millele toetuda ainekava ja õpetaja töökava koostamisel. Edasi käsitleb esimene peatükk tehnoloogia tähtsust erialase inglise keele õpetamisel ning e-õppe eeliseid ning puudusi. Oluline osa on e-kursuste mudelite kirjeldamisel, kuna motiveeriv ning kvaliteetne kursus tuleb koostada põhjalikult erinevaid etappe läbi mõeldes.

Teine peatükk kirjeldab erialase inglise keele kursuse koostamist küberkaitse õpilastele ADDIE mudelit kasutades. Esimeses, analüüsi etapis, on välja selgitatud õppijate vajadused küsimustiku abil. Küsimustikule vastajate valim koosneb kõigist küberkaitse suuna õpilastest (kokku 48 vastajat) Põltsamaa Ühisgümnaasiumi 10., 11. ja 12. klassides. Küsimustiku eesmärgiks oli välja selgitada õpilaste arvamus ning vajadused seoses erialase inglise keele kursuse loomisega. Tulemused toetasid juhtkonna soovi õpetada erialast inglise keelt

õppesuuna osana. E-kursuse koostamise mudeli teises osas, kavandamisetapis, on sõnastatud õpieesmärgid ning koostatud kursuse struktuur ja kava koostöös erialaõpetajatega. Ainekava koostamisel on lähtutud õpilaste vajaduste analüüsi tulemustest ning riikliku õppekava üldistest suunitlustest. Väljaöötamise etapi tulemiks on valmis e-kursus, mis koosneb õppematerjalidest koos õpijuhistega Moodle keskkonnas. Pööratud on tähelepanu lugemis-, kuulamis- ja kirjutamisoskuse arendamisele pannes põhirõhu erialase terminoloogia ning sõnavara õppimisele. Kursus viidi läbi õppeaastal 2017-2018 oktoobrist aprillini klassides 11 ja 12. Teise peatüki viimane osa kirjeldab hindamise etappi, kus analüüsitakse õpilaste tagasisidet kursusele, mis viidi läbi aprillis, 2018. Tagasiside analüüs annab õpetajale vajalikku informatsiooni kursuse edasiseks parendamiseks. Tulemustest lähtus, et kuigi õpilased olid enamasti rahul e-kursuse lihtsa struktuuriga, tuleb tähelepanu pöörata illustratiivsetele materjalidele ning kursuste üldisele disainile. Lisaks sellele on oluline pidevalt üle vaadata ning uuendada õppematerjale, et need oleksid kaasaegsed ning vastaksid õpilaste vajadustele. Käesoleva kursuse tagasisidest lähtudes tuleb oluliselt tööd teha hindamise osas.

Käesolev magistritöö võib olla toeks erialase inglise keele õpetajatele, kes puutuvad kokku e-õppega ning soovivad koostada e-kursust õpilastele. E-õpe on paindlik, motiveeriv ning võimaldab õpet igal pool, kus on ligipääs internetile, seega on see sobilik erineva tasemega õpilastele. Soovituslik on täiendada ning arendada õppematerjale, et need vastaksid kõigi õpilaste vajadustele.

Magistritöös on kasutatud 40 allikat ja tööl on 5 lisa.

Märksõnad:

Erialane inglise keel; e-õpe; ADDIE mudel; ainekava koostamine

Lihtlitsents lõputöö reprodutseerimiseks ja lõputöö üldsusele kättesaadavaks tegemiseks

Mina, MARGIT UUS

1. annan Tartu Ülikoolile tasuta loa (lihtlitsentsi) enda loodud teose
DESIGNING AN ENGLISH FOR SPECIFIC PURPOSES E-COURSE FOR CYBER DEFENCE STUDENTS AT PÕLTSAMAA CO-EDUCATIONAL GYMNASIUM,

Erilalase inglise keele kursuse koostamine küberkaitse suuna õpilastele Põltsamaa Ühisgümnaasiumis,

Magistritöö

mille juhendajad on Liina Tammemägi ja Ülle Türk

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Tartus, 15.05.2018